FOLLOWING IS AMENDED PAGE 15 IN A FORM

SHOWING THE AMENDMENTS MADE

invention includes, as previously stated, (1) bodies that are most preferably in the form of carrier particles and that are made of material that do not interfere with photocatalytic activity and do not adversely interact with other components in an end-use application. These (1) bodies that are non-deleterious to photocatalytic reaction have (2) surfaces that are photocatalytic, forming thus a composite photocatalytic material.

[0082] Moreover, these (2) surfaces are not substantially evenly possessed of photocatalytic material and photocatalytic action, but preferably have such photocatalytic material highly specifically located in "spots", or "islands" that may themselves be either 2 or 3-dimensional.

[0083] To realize these "islands" of photocatalyst, the (2) surfaces of the (1) bodies, or carrier particles, are not made from continuous films of photocatalytic material, but are instead made by attaching discrete nanoparticles of photocatalyst. These nanoparticles of photocatalyst are preferably smaller--normally 1.times.10-9 to 1.times.10-7 meters in diameter--than are the carrier particles themselves, which are commonly about 1.times.10-7 to 1.times.10-2 meters in diameter, depending on application. The nanoparticles of photocatalytic material are typically each less than 33% the diameter of the carrier, or core, particles, upon which they reside, and the combined photocatalytic material is typically less than 20% by weight of (i) the combined multiplicity of photocatalytic material nanoparticles and (ii) the carrier, or core, particle.

[0084] Both the size of the (2) carrier particles, or bodies, and the density of the spots, or islands, of (1) surface photocatalytic material are a function of intended application. An exemplary application of a carrier large particle might be for use in a gravel-like roof coating where it is substantially desired only that large, ground-observable, patches of algae should not grow on the roof. In this application the photocatalytic spots, or islands, might also be relatively widely separated, the main goal not being to kill every bacteria or algal cell on the roof, but to prevent formation of a bio-film. Exemplary applications of small carrier particles include the lips of a swimming pools, bathroom tiles, and hospital coatings where it is desired to avoid all bacterial growth whatsoever. Not only are the carrier particles small, but the photocatalytic spots, or islands, may be relatively

CLAIMS IN AMENDATORY FORM

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36. (Presently amended) A composite body exhibiting a photocatalytic effect consisting essentially of

a core particle consisting ~~essentially~~ of a material without deleterious effect on a photocatalytic reaction; and

a multiplicity of nanoparticles, each less than 33% the diameter of the core particles, of photocatalytic material upon the surface of the core particle, the photocatalytic material being less than 20% by weight of (~~i~~ i) the combined multiplicity of photocatalytic material nanoparticles and (ii) the core particle.

37. (Original) The composite body according to claim 36

wherein the core particle is less than 1 centimeter in diameter; and wherein each of the multiplicity of nanoparticles is of diameter less than 100 nanometers.

38. (Presently amended) The composite body according to claim 36 wherein the core particle's material without deleterious effect on a photocatalytic reaction consists essentially of

a material ~~drawn~~ selected from the group consisting ~~essentially~~ of silicates and carbonates ~~including silicate and carbonate powders~~, mineral and mineral composites ~~including calcined clay and wollastonite~~, metal oxides ~~including zinc oxide~~, and inorganic pigments~~, and construction aggregates including roofing granules~~.

39. (Presently amended) The composite body according to claim 36 wherein the core particle's material consists ~~essentially~~ of

a polymer.

40. (Presently amended) The composite body according to claim 39 wherein the core particle's polymer material consists ~~essentially~~ of

a polymer ~~drawn~~ selected from the group consisting ~~essentially~~ of acrylics, acrylonitriles, acrylamides, butenes, epoxies, fluoropolymers, melamines, methacrylates, nylons, phenolics, polyamids, polyamines, polyesters, polyethylenes, polypropylenes, polysulfides, polyurethanes, silicones, styrenes, terephthalates, and vinyls.

41. (Original) The composite body according to claim 39

wherein the polymer core particle is less than 1 centimeter in diameter.

42. (Presently amended) The composite body according to claim 36 wherein the photocatalytic material of the multiplicity of nanoparticles is ~~drawn~~

selected from the group of metal compound semiconductors consisting ~~essentially~~ of

titanium, zinc, tungsten and iron, and oxides of titanium, zinc, tungsten and iron, and strontium titanates.

43. (Presently amended) The composite body according to claim 42 wherein the metal compound semiconductor photocatalytic material is combined with a metal or metal compound ~~drawn~~ selected from the group consisting of vanadium, iron, cobalt, nickel, copper, zinc, ruthenium, rhodium, silicon, tin, palladium, gold, platinum, and silver.

44. (Presently amended) The composite body according to claim 36 wherein the photocatalytic material is ~~drawn~~ selected from the group of metal compound semiconductors consisting ~~essentially~~ of anatase titanium dioxide and zinc oxide.

45. (Original) The composite body according to claim 36 wherein the photocatalytic material consists of particles of a diameter from 1 nanometer to 100 nanometers.

46. (Original) The composite body according to claim 36 wherein the photocatalytic material consists of particles of diameter from 1 nanometer to 50 nanometers.

47. (Original) The composite body according to claim 36 wherein the photocatalytic material consists of particles of diameter from 1 nanometer to 10 nanometers.

48. (Original) The composite body according to claim 36 wherein the core particles consist of particles of diameter from 100 nanometers to 1 centimeter.

49. (Original) The composite body according to claim 36 wherein weight of the photocatalytic material of the combined multiplicity of nanoparticles is less than 10% of weight of the core particle.

50. (Presently amended) A ~~great~~ multiplicity of composite bodies in accordance with claim 36 incorporated in amount from 0.001% to 85% by volume within a composition suitable for use as an additive to a coating or a coating.

51. (Presently amended) The great multiplicity of composite bodies in accordance with claim 50 incorporated in a composition that further includes one or more materials selected from the group of building materials consisting of concrete, cement, ceramic, stucco, hard flooring, masonry, roofing shingles, wall shingles, building siding and swimming pool surfaces.

52. (Original) The great multiplicity of composite bodies in accordance with claim 50 incorporated in a composition that is effective as an anti-fouling coating.

53. (Original) The composite body according to claim 36 effective in killing by contact any of algae, bacteria, mold or fungus.

54. (Presently amended) The composite body according to claim 36 wherein, at a proportion by weight of the photocatalytic material in the composite ~~particle~~ body of less than 10%, the efficacy of the photocatalytic material within the composite ~~particle~~ body to kill by contact algae, bacteria, mold, and fungus upon surfaces of the composite ~~particle's surface~~ body is at least one-half (.5) as good as is the efficacy of this same photocatalytic material to kill in purest form, making that at least equal killing effect is realized with a five to one (5:1) reduction in the amount of photocatalytic material when this photocatalytic material is upon the surfaces of the composite ~~particle~~ body.